# Optional valency complementations in Czech light verb constructions[1]



Václava Kettnerová (Charles University, Prague)

**ABSTRACT**

This paper addresses Czech light verb constructions, partly revising principles of their syntactic structure formation formulated within the Functional Generative Description. It argues that obligatoriness of valency complementations should be reflected in these principles. Namely, the role of optional valency complementations of light verbs played in this process has been analyzed. This analysis has shown that in the cases where light verbs do not provide a sufficient number of valency complementations for the surface expression of semantic participants of predicative nouns, semantic participants of nouns make use of optional verbal complementations; namely ORIGin, LOCative and BENefactor have been attested in the VALLEX lexicon. In such cases, semantic participants can be expressed on the surface, either as optional verbal complementation or as nominal complementation. The distribution of verbal and nominal complementations have been observed in 1,600 light verb constructions extracted from the Czech National Corpus, with the result that the surface expression of these participants through the optional verbal complementations is strongly preferred (88% of verbal complementations and 12% of nominal ones). The semantic analysis has indicated that the optional verbal complementations are overrepresented as they cover broader semantic contexts than the corresponding nominal ones.

**KEYWORDS**

coreference, Czech, light verb constructions, optional verbal complementations, surface structure

**DOI**

https://doi.org/10.14712/18059635.2021.1.1

## 1 INTRODUCTION

Light verb constructions (henceforth LVCs) represent an advanced syntactic phenomenon the description of which is a challenge for any syntactic theory. In this paper, I follow the analysis of Czech LVCs within the Functional Generative Description (henceforth FGD) elaborated by Kettnerová et al. (2018). I further deepen this syntactic analysis, focusing on the role of optional complementations of light verbs in the formation of the syntactic structure of Czech LVCs.

Czech LVCs are similar to language-specific constructions recognized in other languages, e.g., in French (Gross 1981; Gross 1996), Italian (Cantarini 2004; Jezek 2011), Spanish (Alba-Salas 2002), Russian (Mel'čuk 1996; Apresjan 2009), Polish (Vetulani 2000), German (Polenz 1963), English (Cattell 1984; Brinton and Akimoto 1999;

1 The research reported in this paper has been supported by the grant LINDAT/CLARIAH-CZ, Digital Research Infrastructure for Language Technologies, Arts and Humanities (LM2018101); this work has been using language resources distributed by this grant.

Baron and Herslund 1998), Japanese (Grimshaw and Mester 1988; Miyamoto 2000), Korean (Choi and Wechsler 2002), Urdu (Butt 1997; 2010), Hindi (Mohanan 1994), and Persian (Karimi-Doostan 2005). LVCs are alternatively referred to as support verb constructions, constructions with function verbs, stretched verb constructions (Allerton 2002), or periphrastic verbal constructions (Wierzbicka 1982). The main similarity between these constructions is the fact that a predicate is composed of two elements: a semantically underspecified verb and another predicative element (typically a noun), both forming together a single predication. This predication exhibits a discrepancy in syntax and semantics: from the pair of a predicative noun and a light verb, it is the noun — despite being syntactically dependent on the verb — that represents its semantic core.[2] The semantic properties of light verbs are the subject of a lively debate in current linguistics. Their semantic interpretation typically varies from (i) being semantically empty, see e.g., (Grimshaw and Mester 1988), (Cattell 1984), (Mel'čuk 1996), and (Gross 1981), to (ii) having some lexical properties (Butt 2010; Butt and Geuder 2013; Sanromán Vilas 2011; Apresjan 2009). In Czech, light verbs span the scale from verbs with general meaning (e.g., *mít* 'to have', *dělat* 'to do', *dát* 'to give', *dostat* 'to get') to verbs with more distinctive meaning (e.g., *poskytnout* 'to provide', *uložit* 'to impose', *přijmout* 'to receive', *upřít* 'to fix'). From the lexical semantic perspective, these verbs primarily differ in their collocational restrictions (compare, e.g., the light verbs *dát* 'to give', *udělit* 'to grant', *uložit* 'to impose', and *napařit* 'to slap' constituting LVCs with, e.g., the noun *pokuta* 'fine').

The most thorough analysis of Czech LVCs was carried out by Macháčková (1979; 1994) and more recently by Radimský (2010): the former work was inspired by the German concept of function verbs, the latter applies the basic postulates of the French Lexicon-Grammar theory (Gross 1981) to Czech data. A formal account of the syntactic structure formation of Czech LVCs has been proposed within FGD by Kettnerová (2017) and Kettnerová et al. (2018). In FGD, three layers of language description are supposed to be necessary for a full description of LVCs: a layer of cognitive content, a layer of deep syntactic structure, and a layer of surface syntactic structure (Sgall et al. 1986; Panevová et al. 2014). For each of them, different units are posited: semantic participants,[3] valency complementations, and clause elements, respectively. On the

2 This interpretation is in line with Cruse's lexical semantic analysis (1986: 103ff.), in which the semantic head of a LVC would be represented by the noun — not by the light verb — as it is the noun that semantically interacts with other parts of the sentence. For example, the semantic clash in the following sentence with the LVC *dát polibek* 'to give a kiss' is produced by the interaction between the nouns *polibek* 'kiss' and *policie* 'police': *Policie dala Janě polibek* 'The police gave Jane a kiss'. Thus it can be rectified by replacing either the noun *polibek* 'kiss' by, e.g., the noun *pokuta* 'fine' (*Policie dala Janě pokutu* 'The police gave Jane a fine') or by substituting the noun *policie* 'police' by, e.g., the noun *Petr* 'Peter' (*Petr dal Janě polibek* 'Peter gave Jane a kiss'). On the contrary, substituting the verb *dát* 'to give' by the verb *udělit* 'to grant' does not remove the semantic discrepancy (*Policie udělila Janě polibek* 'The police granted Jane a kiss').

3 Description of the cognitive content according to FGD, which follows the distinction between meaning and content, goes beyond the scope of linguistics. However, the correspondence between semantic participants, belonging to cognitive content, and units of

basis of the analysis introduced in Kettnerová (2017) and Kettnerová et al. (2018), a LVC can be defined as a noun-verb pair such that:

(i) the noun occupies a valency complementation of the verb,
(ii) none of the remaining valency complementations in the valency frame of the verb corresponds to a semantic participant of the verb,[4]
(iii) the semantically underspecified valency complementations of the verb are semantically saturated by semantic participants of the noun,
(iv) those semantic participants of the noun that semantically saturate valency complementations of the light verb are structured on the surface as the respective valency complementations of the verb, i.e., as verbal dependents.

It follows from the definition that light verbs allow predicative nouns to employ their semantic participants in verbal structures. The number of semantic participants of the predicative noun employed as verbal dependents depends on the number of semantically unsaturated valency complementions of the light verb. As the annotation of a large number of LVCs in the VALLEX lexicon[5] revealed, at least one nominal participant and at most two nominal participants are syntactically structured as verbal modifications in LVCs, one of them is typically that nominal participant that is mapped onto ACTor of the noun. Here I show that when a valency frame of a light verb does not provide a semantically unsaturated valency complementation for the semantic participant of the noun mapped onto its ACTor (sporadically PATient as well), this semantic participant still displays a tendency to be structured on the surface as a dependent of the verb, making use of an optional complementation of the light verb, which stands outside the valency frame of the verb.[6] In these cases, the surface expression of semantic participants, however, cannot fully comply with characteristic (iv) as these participants can be expressed on the surface as dependents of either the verb or the noun. I thus refine the formal rules allowing for generation of well-formed LVCs, taking into account the role of optional valency complementations. I limit my study to the most frequent Czech LVCs, identified on the basis of the above given definition of LVCs, that are composed of a light verb and a predicative noun expressed in active LVCs as the non-prepositional direct object of the light

the other two syntactic layers is crucial for an analysis of LVCs. Here I determine the set of semantic participants primarily on the basis of the semantically oriented lexicons included in the CzEngClass project (Urešová at al. 2019).

4 For the only exception see Section 2.2.

5 The VALLEX lexicon, version 4.0, contains 3,000 collocations of predicative nouns and light verbs (counted as combinations of a lemma of a light verb and a lemma of a predicative noun), obtained from the Czech National Corpus, SYN2010, using the Sketch Engine (Kilgarriff et al. 2014). These collocations correspond to almost 1,500 LVCs (counted as individual combinations of a lexical unit of a light verb and a lexical unit of a predicative noun). The lexicon is available at http://ufal.mff.cuni.cz/vallex/4.0.

6 The role of obligatory valency complementation of light verbs in LVCs have been thoroughly described by Kettnerová et al. (2018).

verb. From these cases, I focus on such LVCs in which a semantic participant of the predicative noun semantically specifies an optional valency complementation of the light verb; this viewpoint narrows down the range of discussed LVCs and it should be stressed that these cases are not numerous.

## 2 REPRESENTATION OF LIGHT VERB CONSTRUCTIONS IN FGD

In this section, I briefly outline the main tenets of the valency theory of FGD relevant for the description of LVCs (Section 2.1) and the present model of their representation within this framework (Section 2.2). The model builds on the assumption that LVCs are syntactically compositional constructions, i.e., their syntactic structures can be derived from the information on syntactic behavior of predicative nouns and light verbs.[7]

### 2.1 VALENCY THEORY OF FGD

FGD is a dependency-oriented framework with a multilayered design. The primary focus of FGD is the so-called tectogrammatical layer, i.e., a layer of linguistically structured meaning, roughly corresponding to the deep syntactic layer, see esp. Sgall et al. (1986). One of the core components of the tectogrammatical layer is *valency*, the ability of some words (primarily of verbs, but also of some nouns, adjectives and adverbs) to require a number of dependent words. The valent words are usually referred to as predicates. The dependent words, filling valency positions of predicates, represent their valency complementations.[8]

In the valency theory of FGD, valency complementations are divided into actants (inner participants) and free modifications, see esp. Panevová (1994). With verbs, we distinguish five types of actants characterized by functors, i.e., labels representing the type of the dependency relation of an actant to its governing verb: ACTor, PATient, ADDRessee, ORIGin and EFFect. With nouns, the actant MATerial can occur in addition (Piťha 1984). Actants are determined primarily on a syntactic basis. By contrast, free modifications, e.g., LOC (locative), TWHEN (temporal when), CAUS (cause), and MEANS (means), are identified primarily according to their semantics (see esp. Panevová et al. 2014).

Each complementation is either obligatory or optional, see esp. Panevová (1974; 1975). The valency frame of a predicate captures its valency structure by listing its obligatory and optional actants and obligatory free modifications. Optional free modifications are not part of the valency frame but they can be listed for whole groups of semantically similar predicates.

7 Cf. a similar approach to LVCs in the Meaning-Text Theory (Mel'čuk 1982; 1996). Nevertheless, it is worth noting that the fact that verbs and nouns within LVCs have their own syntactic structure is questioned by some scholars, see e.g., (Thompson and Hopper 2001).

8 In some works, this term is reserved for constructions with the predicate taking an argument of the propositional character expressed as a complement clause, see e.g., Dixon and Aikhenvald (2006) and Noonan (2007).

Each valency frame comprises a set of valency positions, each of which stands for one valency complementation, described by a functor and in terms of obligatoriness.[9] Moreover, possible morphemic form(s) are listed where necessary: with verbs they determine the surface realization of valency complementations, i.e., clause elements, in active, non-reflexive and non-reciprocal constructions.[10] With nouns, they indicate the surface expression of valency complementations in non-reflexive and non-reciprocal nominal structures.[11]

The valency theory of FGD has been applied in several lexical resources, esp. in the Prague Dependency Treebank family (Hajič et al. 2018; Hajič et al. 2012) and valency lexicons (Lopatková et al. 2016; Urešová et al. 2014; Urešová et al. 2016).

### 2.2 LIGHT VERB CONSTRUCTIONS IN FGD

LVCs have been studied within FGD esp. by Cinková (2009), Kolářová (2010), Kettnerová (2017) and Kettnerová et al. (2018). The theoretical results have then been applied in the annotation of a large amount of linguistic data in the VALLEX lexicon, see esp. Kettnerová et al. (2018), and they are partly reflected in the Prague Dependency Treebank (Hajič et al. 2018) as well. Let me sketch the present model of the syntactic structure formation of LVCs as elaborated within FGD.

#### 2.2.1 DEEP SYNTACTIC STRUCTURE

It is possible to capture the deep syntactic structure formation of a LVC by rules relying on: (i) the valency frame of the predicative noun, (ii) the frame of the light verb combined with the noun, and (iii) coreference between valency complementations of the light verb and the predicative noun:

(i) The *valency frame of the predicative noun* underlies both its usage in nominal structures and in LVCs. Valency complementations of the noun are in one-to-one correspondence with semantic participants (the correspondence is the same regardless of whether the predicative noun is used in nominal structures or in LVCs).
(ii) The *valency frame of the light verb* underlies its usage in LVCs. It is typically identical with the valency frame of its full verb counterpart, which can be usually identified for each light verb. The only difference in the valency frame

9 As obligatoriness of valency complementations of nouns is often questioned and as it is not crucial for my explanation, I leave this information aside here.

10 Reflexive constructions refer here to those constructions that are characterized by coreference of the reflexive pronoun and a valency complementation of a verb expressed in the subject position, typically the ACTor (e.g., *Petr se vidí jako vůdce* 'Peter perceives himself as a leader'). Under the term reciprocal constructions, I understand those constructions that involve two propositions (e.g., *Petr a Marie se milují* 'Peter and Mary love each other' involves *Petr miluje Marii* 'Peter loves Mary' and *Marie miluje Petra* 'Mary loves Peter'), see esp. Kettnerová and Lopatková (2019).

11 Valency of nouns within FGD has been described esp. by Kolářová (2010; 2014), Kolářová et al. (2019) and Panevová et al. (2014).

of the light verb is that one of its valency complementations is reserved for a predicative noun (in FGD labelled with the CPHR functor, Compound PHRaseme).

Valency complementations of light verbs — with respect to the semantic underspecification of these verbs — do not correspond to any semantic participants, cf. Alonso Ramos (2007) and Grimshaw and Mester (1988). Only with causative light verbs (e.g., *budit* 'to arouse', *vyvolat* 'to cause'), one of their valency complementations corresponds to the semantic participant Instigator, instigating the event expressed by the predicative noun.

(iii) *Coreference* between valency complementations of the light verb and the predicative noun is a fundamental characteristic of LVCs. Via coreference with valency complementations of predicative nouns, semantically underspecified valency complementations of light verbs acquire their semantic capacity.

Information (i), (ii) and (iii) is stored in the lexicon where light verbs and predicative nouns forming individual LVCs are linked together. In the grammar, rules operating on individual valency frames of predicative nouns and light verbs make use of the information on coreference, see esp. Kettnerová et al. (2018). These rules stipulate first that the deep syntactic structure of a LVC consists of all valency complementations of the light verb and all complementations of the predicative noun, occupying the CPHR complementation of the verb, and second, that respective pairs of nominal and verbal valency complementations are linked by coreference.

For example, the deep structure of the LVC *chovat nenávist* 'to hold hatred' is described by the valency frame of the light verb *chovat* 'to hold' (1) and by the valency frame of the noun *nenávist* 'hatred' (2). The valency frame of the light verb *chovat* 'to hold' in (1) underlies its usage in other LVCs as well (e.g., *chovat cit* 'have affection', *chovat nedůvěru* 'to have distrust', *chovat podezření* 'to have a suspicion', *chovat úctu* 'to have respect'). The valency frame of the noun *nenávist* 'hatred' (2) describes its usage in nominal structures and in other LVCs as well (e.g., *pojmout nenávist* 'to start to feel hatred', *vzbudit nenávist* 'to arouse hatred', *vyvolat nenávist* 'to arouse hatred').

In the deep syntactic structure of the LVC *chovat nenávist* 'to hold hatred', valency complementations of both the light verb *chovat* 'to hold' (ACTor and Compound PHRaseme) and the predicative noun *nenávist* 'hatred' (ACTor and PATient semantically corresponding to Experiencer and Stimulus, respectively) are contained. The noun *nenávist* 'hatred' occupies the valency complementation CPHR of the light verb. The other complementation of the light verb — the ACTor — acquires semantic specificity via coreference with the ACTor of the predicative noun, see the scheme of the mapping of semantic participants in (3). The simplified deep dependency tree of example (4) is provided in Figure 1 (upper part a.) below.[12]

12 The numbers indicate cases, *pos* stands for possessive adjectives or pronouns, *obl* marks obligatoriness.

(1) *chovat* 'to hold': $ACT_1^{obl}$ $CPHR_4^{obl}$

(2) *nenávist* 'hatred': $ACT_{2,pos}$ $PAT_{k+3,proti+3,vůči+3}$

(3) *chovat nenávist* 'to hold hatred': $Experiencer_n \Rightarrow ACT_n \leftrightarrow ACT_v$[13]
$Stimulus_n \Rightarrow PAT_n$

(4) *Muž-Ø* *choval-Ø* *nenávist-Ø* *k armád-ě.*
man-NOM.SG.M held-SG.M hatred-ACC.SG.F to army-DAT.SG.F
'The man held hatred for the army.'

### 2.2.2 SURFACE SYNTACTIC STRUCTURE

The surface structure of an active LVC is governed by principles operating on its deep syntactic structure. These principles say that from each pair of coreferring verbal and nominal valency complementations, only the *verbal complementation* is expressed on the surface as the morphemic forms determine for this complementation in the valency frame of the light verb; the nominal complementation from this coreferring pair is elided from the surface. Other valency complementations outside coreference, be it verbal or nominal, are realized in the surface structure by the morphemic forms prescribed in the respective valency frames.[14]

For example, according to the principles given above, the valency frame of the light verb (1') and the valency frame of the predicative noun (2') underlying the surface structure of the LVC *chovat nenávist* 'to hold hatred' are as follows:

(1') *chovat* 'to hold': $ACT_1^{obl}$ $CPHR_4^{obl}$

(2') *nenávist* 'hatred': $ACT_Ø$ $PAT_{k+3,proti+3,vůči+3}$

From the valency frame of the light verb (1'), both the ACTor and CPHR are realized on the surface as their morphemic forms determine: ACTor as the subject (*muž* 'man' in example (4)) and CPHR as the direct object (*nenávist* 'hatred' in (4)). From the valency frame of the predicative noun (2'), only the PATient is expressed on the surface as an adnominal attribute (*k armádě* 'to army' in (4)). The ACTor of the predicative noun, being coreferring with the ACTor of the light verb, see scheme (3), is deleted from the surface (see Ø in the lower index). See Figure 1 (lower part b.) displaying the simplified surface dependency tree of example (4).

13 The symbols *n* and *v* in the lower index with semantic participants and valency complementations distinguish whether they are nominal or verbal. The rightward double arrow shows the mapping of semantic participants onto valency complementations, the left right arrow marks coreference between nominal and verbal complementations.

14 These principles have been verified in the Prague Dependency Treebank 3.0 (Kettnerová and Bejček 2016). Let me stress that the surface structure governed by these principles can be subsequently subject to other types of systemic as well as non-systemic textual ellipsis; on ellipsis in FGD see esp. Panevová et al. (2014).

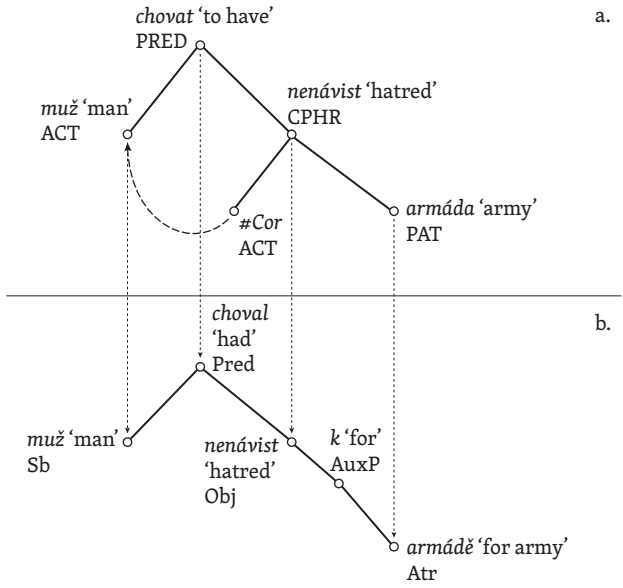


**FIGURE 1.** The simplified deep (a) and surface dependency tree (b) of sentence (4). The fine dashed arrow pointing from the ACTor of the noun to the ACTor of the verb in (a) represents the coreferential link. The lemma #Cor assigned to the nominal ACTor marks that this node is added to the deep dependency tree and has no surface counterpart. The dashed arrows pointing from (a) to (b) show correspondence between the deep and surface nodes.

The principles formulated for the surface structure of LVCs ensure that each semantic participant is expressed on the surface only once.[15] The principles of the *surface expression of semantic participants within LVCs* can be summarized as follows:

(ia) Nominal semantic participants that are mapped within LVCs only onto nominal valency complementations are expressed on the surface as the respective nominal complementations.
(ib) Nominal semantic participants that are mapped within LVCs onto both nominal and — via coreference — verbal complementations are realized as the respective verbal complementations.
(ii) The verbal semantic participant Instigator contributed to LVCs by causative light verbs is expressed on the surface as the verbal complementation onto which it is mapped.

15 In this respect, LVCs do not differ from constructions with full verbs. Only in very rare cases, a semantic participant mapped onto the ACTor of a predicative noun and at the same time — via coreference — onto the ACTor of the light verb combined with the noun can be expressed twice (e.g., *Svá*$_{ACTn}$ *podezření mají i místní obyvatelé*$_{ACTv}$ 'Local people$_{ACTv}$ have their$_{ACTn}$ suspicions as well'). However, these cases are rather infrequent and their stylistic appropriateness might often be questionable.

For example, the LVC *chovat nenávist* 'to hold hatred' is characterized by two semantic participants — Experience and Stimulus. Both are licensed by the noun *nenávist* 'hatred', see their mappings in (3). The surface expression of Experiencer (*muž* 'man') follows from principle (ib) and Stimulus (*armáda* 'army') is realized in accordance with principle (ia).[16]

## 3 OPTIONAL VERBAL COMPLEMENTATIONS IN ACTIVE LVCS

Here I show that principle (ib), introduced in Section 2.2.2, requires further modification, taking the obligatoriness of valency complementations of light verbs into account (Section 3.1). This modification is supported by a corpus analysis (Section 3.2). Finally, I suggest an interpretation of differences in the distribution of verbal and nominal complementations in the surface structure of LVCs (Section 3.3).

### 3.1 SURFACE REALIZATION OF NOMINAL SEMANTIC PARTICIPANTS

We can observe that semantic participants of predicative nouns in LVCs can be mapped — via coreference — onto optional complementations of light verbs as well. In these cases, the coreferring pair onto which the nominal semantic participant is mapped consists of a nominal valency complementation and an optional verbal complementation (be it actant or free modification).[17] For example, the semantic participant Speaker in the LVC *dostat pokyn* 'to receive an instruction' is mapped onto the nominal ACTor and — via coreference — onto the verbal actant ORIGin, which is optional, see the mapping in this LVC in (7) and the valency frames (5) and (6).

There are two options for expressing such a nominal participant on the surface: besides the possibility to be expressed as the respective optional verbal complementation, it can also be expressed as the respective nominal complementation. For example, in the LVC *dostat pokyn* 'to receive an instruction', the participant Speaker (*tajemník* 'secretary') can be expressed either as the verbal ORIGin (*od tajemníka* 'from the secretary' in (8a)) or as the nominal ACTor (*tajemníka* 'of the secretary' (8b)). Let me stress, however, that only the first variant in (8a), not the latter one in (8b), complies with principle (ib) given in Section 2.2.2.

(5) *pokyn* 'instruction': $\mathrm{ACT}_{2,od+2,pos}\ \mathrm{ADDR}_{2,3,pos}\ \mathrm{PAT}_{k+3,inf,aby,ať,zda,že,cont}$

(6) *dostat* 'to receive': $\mathrm{ACT}_{1}^{\ obl}\ \mathrm{CPHR}_{4}^{\ obl}\ \mathrm{ORIG}_{od+2}^{\ opt}$

16 Let me remark that the order of nodes in the surface structure of LVCs is often non-projective: e.g., the expression *s ostatními* 'with other people' depends on the noun *soucit* 'sympathy' as its PATient in both sentences *Měl soucit s ostatními* 'He had sympathy with other people' and *Soucit, jaký měl s ostatními, byl pozoruhodný* 'Sympathy which he had with other people was remarkable'; in the latter sentence, PATient is, however, placed non-projectively; on projectivity see (Uhlířová and Kučerová 2017).

17 Let me remind the reader that only optional actants are part of valency frames. In contrast, optional free modifications stand outside valency frames. See Section 2.1.

(7) *dostat pokyn* 'to receive an instruction': $Speaker_n \Rightarrow ACT_n \leftrightarrow ORIG_v$
$Recipient_n \Rightarrow ADDR_n \leftrightarrow ACT_v$
$Message_n \Rightarrow PAT_n$

(8) a. *Každý úředník-Ø dostal-Ø od tajemník-a*
each official-NOM.SG.M got-SG.M from secretary-GEN.SG.M
*pokyn-Ø, aby ve všem občanům pomáhal.*
instruction-ACC.SG.M COMPL in all citizens helped.
b. *Každý úředník-Ø dostal-Ø pokyn-Ø*
each official-NOM.SG.M got-SG.M instruction-ACC.SG.M
*tajemník-a, aby ve všem občanům pomáhal.*
secretary-GEN.SG.M COMPL in all citizens helped.
(SYN2013pub)
'Each official has been instructed to assist citizens in all matters.'

To remove this inconsistency, I adjust principle (ib) by splitting it into two principles:

— First, a nominal semantic participant that is mapped within LVCs onto a nominal complementation and — via coreference — onto an *obligatory verbal complementation* is realized on the surface as the verbal complementation.
— Second, a nominal semantic participant that is mapped within LVCs onto a nominal complementation and — via coreference — onto an *optional verbal complementation* is realized on the surface as either the verbal or nominal complementation.

### 3.2 CORPUS ANALYSIS

In the data from the VALLEX lexicon, there are only three types of optional complementations of light verbs that constitute parts of coreferring pairs in LVCs: one actant ORIGin (see examples (8a) and (8b) in Section 3.1) and two free modifications: LOCative and BENefactor. The listed optional complementations are in most cases in coreference with the nominal ACTor and sporadically with the nominal PATient. In terms of the coreferring pairs featuring the listed optional verbal complementations, the following four combinations were found in the data: $ACT_n$-$ORIG_v$, $ACT_n$-$LOC_v$, $PAT_n$-$LOC_v$, and $ACT_n$-$BEN_v$, see Table 1.[18]

I manually analyzed a random sample of 1,600 sentences with respect to the surface expression of a semantic participant mapped onto the four coreferring pairs $ACT_n$-$ORIG_v$, $ACT_n$-$LOC_v$, $PAT_n$-$LOC_v$ and $ACT_n$-$BEN_v$. For each of the 4 coreferring pairs, 4 different LVCs were selected and for each of the 16 selected LVCs,[19] 100 sen-

18 In Table 1, I use the notion lexical unit in the lexicographic sense. As light verbs form multiword lexical units with predicative nouns, they do not represent lexical units as such from the perspective of lexical semantics. However, they can be lexicographically captured in a similar way as individual lexical units of full verbs, see their representation in the VALLEX lexicon.

19 For each of the 16 selected LVCs, another semantic participant is relevant: e.g., with the LVC *dostat*$^{pf}$*, dostávat*$^{impf}$ *svolení* 'to get permission', it is Speaker that is mapped onto the

| | Number of lexical units | Number of lemmas | Coreference with nominal complementation | Example |
|---|---|---|---|---|
| ORIGin | 6 | 13 | ACTor | *přijmout*$^{pf}$, *přijímat*$^{impf}$ *úplatek* 'to take a bribe' |
| LOCative | 17 | 32 | ACTor | *vyvolat*$^{pf}$, *vyvolávat*$^{impf}$ *podezření* 'to raise suspicion' |
| | 3 | 7 | PATient | *najít*$^{pf}$, *nacházet*$^{impf}$ *zalíbení* 'to take a liking' |
| BENefactor | 4 | 9 | ACTor | *otevřít*$^{pf}$, *otvírat*$^{impf}$/*otevírat*$^{impf}$ *možnost* 'to open up a possibility' |

**TABLE 1.** Basic statistics on light verbs with an optional complementation in the VALLEX lexicon.

tences were analyzed (1,600 sentences in total). The results of the manual analysis are summarized in Tables 2 and 3: Table 2 shows counts on the 16 selected LVCs and Table 3 provides summarizing statistics across the individual coreferring pairs.

The 1,600 sentences were obtained from the Czech National Corpus, SYNv7, synchronic corpus of written texts (Křen et al. 2017), on the basis of the query [lemma="verb_lemma" & tag="V[^s].*"], searching for the light verbs (clustering aspectual counterparts, if relevant), excluding their passive participle forms. Then the positive filter +5, −5 [lemma="noun_lemma" & tag="N...4.*"] was applied, returning the predicative nouns in the accusative case in the context of five tokens from the found verb lemma(s). For each LVC, first 100 sentences were manually analyzed with respect to whether the nominal valency complementation (column $ACT_n$ and $PAT_n$ in Table 2) or the optional verbal complementation (column $ORIG_v$, $LOC_v$, and $BEN_v$ in Table 2) was expressed on the surface.

For each LVC, only a single coreferring pair was relevant, e.g., in the case of the LVC *budit soucit* 'to arouse sympathy', either the nominal ACTor or the verbal LOCative could be expressed on the surface, see Table 2. Column Ambig in Table 2 is relevant only for the LVCs with the coreferring pair $ACT^n$-$ORIG^v$. It provides numbers of cases in which it was impossible to determine whether the valency complementation expressed on the surface was the nominal ACTor or the verbal ORIGin: e.g., in the sentence *Ve chvíli, kdy svolení od dědičky nedostaneme, ...* 'When we do not get permission from the heiress, ...', the prepositional group *od dědičky* 'from the heiress' can be interpreted — with respect to the morphemic form — as either the verbal ORIGin or the nominal ACTor.

Not all of the 1,600 analyzed sentences contained the semantic participants of our interest on the surface (the differences in the surface expression of semantic participants result especially from systemic and non-systemic ellipsis). The highest number

nominal ACT and the verbal ORIGin, while with the LVC *nalézt/naleznout*$^{pf}$, *nalézat*$^{impf}$ *uspokojení* 'to find satisfaction', it is Experiencer that corresponds to the nominal PAT and the verbal LOC. However, I leave specific types of semantic roles of participants aside here as they are not highly relevant for my further explanation.

of instances — 90 out of 100 analyzed sentences — containing such a participant was found for the LVC *zvednout*$^{pf}$*/zvedat*$^{impf}$ *sebedůvěru* 'to increase self-confidence'. The smallest number (18 in total) was found for the LVC *získat*$^{pf}$*, získávat*$^{impf}$ *uznání* 'to gain recognition', see Table 2. In each of the 16 analyzed LVCs, the observed semantic participants were more often expressed on the surface as the listed optional verbal complementations than as the nominal complementation; only the LVCs *získat*$^{pf}$*, získávat*$^{impf}$ *uznání* 'to gain recognition' and *ztratit*$^{pf}$*, ztrácet*$^{impf}$ *respekt* 'to lose respect' represent exceptions, in which the participants of our interest were realized in the surface structure more often as the nominal ACTor. The following examples illustrate the optional verbal complementations expressed on the surface in the LVCs with the coreferring pair $ACT_n$-$ORIG_v$ (9a), $ACT_n$-$LOC_v$ (10a), $ACT_n$-$BEN_v$ (11a) and $PAT_n$-$LOC_v$ (12a), as found in the data. Let me stress, however, that variants with the nominal complementation expressed on the surface are still possible as their near paraphrases as examples (9b)–(12b) show.

(9) a. *Od sponzorů*$_{ORIGv}$ *jsme dostali svolení.* (SYNv7)
from sponsors$_{ORIGv}$ got permission
b. *Dostali jsme svolení sponzorů*$_{ACTn}$.
got permission of sponsors$_{ACTn}$
'We got sponsors' permission.'

(10) a. *… zvířata budila v záchranářích*$_{LOCv}$ *soucit.* (SYNv7)
… animals aroused in rescuers$_{LOCv}$ sympathy
b. *… zvířata budila soucit záchranářů*$_{ACTn}$.
… animals aroused sympathy of rescuers$_{ACTn}$
'Animals aroused rescuers' sympathy.'

(11) a. *Seminář … jí*$_{BENv}$ *zvedl sebedůvěru.* (SYNv7)
workshop her$_{BENv}$ raised self-confidence
b. *Seminář … zvedl její*$_{ACTn}$ *sebedůvěru.*
workshop raised her$_{ACTn}$ self-confidence
'The workshop increased her self-confidence.'

(12) a. *Král totiž našel potěšení v týrání*$_{LOCv}$ *žen.* (SYNv7)
king in fact found pleasure in torture$_{LOCv}$ of women
'The king found pleasure in cruelty to women.'
b. *Král totiž našel potěšení z týrání*$_{PATn}$ *žen.*
king in fact found pleasure from torture$_{PATn}$ of women
'The king found pleasure from cruelty to women.'

In total, the optional verbal complementations expressed on the surface heavily outnumbered the nominal ones when counted across all the LVCs (592 verbal complementations compared to 82 nominal complementations) and across all the four coreferring pairs as well (each of the pair subsuming four different LVCs), see Table 3. When proportions of the verbal and nominal complementations expressed on the

| | $ACT_n$ | $PAT_n$ | $ORIG_v$ | $LOC_v$ | $BEN_v$ | Ambig | Total |
|---|---|---|---|---|---|---|---|
| *dostat*$^{pf}$*, dostávat*$^{impf}$ *svolení* 'to get permission' | 6 | — | 22 | — | — | 15 | **43** |
| *přijmout*$^{pf}$*, přijímat*$^{impf}$ *rozkaz* 'to get an order' | 2 | — | 17 | — | — | 12 | **31** |
| *získat*$^{pf}$*, získávat*$^{impf}$ *půjčku* 'to get a loan' | 0 | — | 17 | — | — | 12 | **29** |
| *získat*$^{pf}$*, získávat*$^{impf}$ *uznání* 'to gain recognition' | 13 | — | 2 | — | — | 3 | **18** |
| *budit*$^{impf}$ *soucit* 'to arouse sympathy' | 1 | — | — | 21 | — | — | **22** |
| *nalézt/naleznout*$^{pf}$*, nalézat*$^{impf}$ *oporu* 'to find support' | 1 | — | — | 77 | — | — | **78** |
| *vyvolat*$^{pf}$*, vyvolávat*$^{impf}$ *pochybnost* 'to raise a doubt' | 7 | — | — | 15 | — | — | **22** |
| *ztratit*$^{pf}$*, ztrácet*$^{impf}$ *respekt* 'to lose respect" | 21 | — | — | 12 | — | — | **33** |
| *otevřít*$^{pf}$*, otvírat/otevírat*$^{impf}$ *možnost* 'open up a possibility' | 3 | — | — | — | 44 | — | **47** |
| *uzavřít*$^{pf}$*, uzavírat*$^{impf}$ *přístup* 'to close access' | 8 | — | — | — | 19 | — | **27** |
| *vytvořit*$^{pf}$*, vytvářet*$^{impf}$ *příležitost* 'to create an opportunity' | 0 | — | — | — | 68 | — | **68** |
| *zvednout*$^{pf}$*, zvedat*$^{impf}$ *sebedůběru* 'to increase self-confidence' | 10 | — | — | — | 80 | — | **90** |
| *najít*$^{pf}$*, nacházet*$^{impf}$ *potěšení* 'to find pleasure' | — | 5 | — | 74 | — | — | **79** |
| *najít*$^{pf}$*, nacházet*$^{impf}$ *útěchu* 'to find relief' | — | 1 | — | 42 | — | — | **43** |
| *nalézt/naleznout*$^{pf}$*, nalézat*$^{impf}$ *štěstí* 'to find happiness' | — | 0 | — | 21 | — | — | **21** |
| *nalézt/naleznout*$^{pf}$*, nalézat*$^{impf}$ *uspokojení* 'to find satisfaction' | — | 4 | — | 61 | — | — | **65** |
| **Total** | **72** | **10** | **58** | **323** | **211** | **42** | **716** |

**TABLE 2.** A manual analysis of 1,600 sentences with the selected LVCs.

surface are arranged in descending order according to the number of the verbal ones, the ranking of the LVCs subsumed under the four coreferring pairs is as follows: the LVCs with the pair $PAT_n$-$LOC_v$, $ACT_n$-$BEN_v$, $ACT_n$-$LOC_v$, and $ACT_n$-$ORIG_v$, see column Verbal complementation in Table 3 and Figure 2.

Although the optional verbal complementations are preferred in the analyzed sentences, the proportions of the verbal and nominal complementations expressed on the surface differ within the coreferring pairs. These differences raise the question to what extent the surface expression of the semantic participants of our interest either as the nominal complementation or as the verbal one is independent of the

| | Nominal complementation Number / Proportion | Verbal complementation Number / Proportion | Total |
|---|---|---|---|
| $ACT_n$-$ORIG_v$ | 21 / 0.27 | 58 / 0.73 | **79** |
| $ACT_n$-$LOC_v$ | 30 / 0.19 | 125 / 0.81 | **155** |
| $ACT_n$-$BEN_v$ | 21 / 0.09 | 211 / 0.91 | **232** |
| $PAT_n$-$LOC_v$ | 10 / 0.05 | 198 / 0.95 | **208** |
| **Total** | **82 / 0.12** | **592 / 0.88** | **674** |

**TABLE 3.** The verbal and nominal complementations expressed on the surface in the analyzed 1,600 LVCs counted across the four coreferring pairs $ACT_n$-$ORIG_v$, $ACT_n$-$LOC_v$, $ACT_n$-$BEN_v$, and $PAT_n$-$LOC_v$.

coreferring pair $ACT_n$-$ORIG_v$, $ACT_n$-$LOC_v$, $ACT_n$-$BEN_v$ and $PAT_n$-$LOC_v$. To answer this question, I applied the $\chi^2$ test of independence. Its result shows that the null hypothesis of no association between the surface expression and the type of the coreferring pairs can be discarded (df = 3, p-value = 9.527e–08). The effect size of association, measured by Cramér's V, is, however, small (0.23).[20] To conclude, there is the marked preference for the verbal complementations over the nominal ones across all the four coreferring pairs and the distribution of the verbal and nominal complementations is only slightly dependent on the coreferring pair.

### 3.3 SEMANTIC DIFFERENCES BETWEEN VARIANTS

The analysis has shown that the optional verbal complementations are preferred over the nominal ones (Section 3.2). There is still the question whether the distribution of the verbal and nominal complementations is not semantically motivated. In other words, is there any semantic difference between the variants with the optional verbal complementation and the variants with the corresponding nominal ones on the basis of which the preference for the verbal complementations can be accounted for?

Let me start with the surface variants for which the coreferring pair $ACT_n$-$BEN_v$ is relevant. In these constructions, the strong preference for the verbal BENefactor over the nominal ACTor can be observed, see Table 3 in Section 3.2. This preference can be explained in terms of a tendency towards encoding (inalienable and partly also alienable) possession in Czech by means of the so-called possessive dative (the verbal BENefactor in these cases) rather than by means of the possessive pronouns/adjectives or the genitive case, see Piťha (1971; 1992), Macháčková (1992), and Razímová (2004).[21]

20 Ambiguous instances (see column Ambig in Table 2) were disregarded here. If ambiguous instances of the prepositional group *od*+gen in the LVCs with the coreferring pair $ACT_n$-$ORIG_v$ were interpreted as the verbal ORIGin (e.g., *Pokud nedostanou svolení od klubu*$_{ORIGv}$ … 'If they do not get permission from the club$_{ORIGv}$…'), the effect size of association would be even smaller (0.18). In contrast, taking them as the nominal ACTor (e.g., *Pokud nedostanou svolení od klubu*$_{ACTn}$ … 'If they do not get permission from the club$_{ACTn}$…') increases the effect size to 0.44.

21 Piťha (1971) points out that possessive dative constructions in Czech are hard to delimit as the possessive meaning of dative is not grammatically distinguished from other meanings

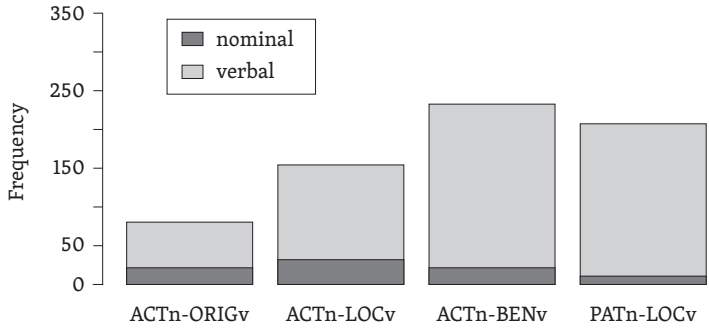


**FIGURE 2.** Visualized proportions of the nominal and verbal complementations expressed on the surface in the manually analyzed 1,600 LVCs. The bars display the proportions across the four coreferring pairs of the complementations (the dark grey displays the nominal complementations and the light grey depicts the verbal ones).

Macháčková (1992) observed that sentences with the possessive dative and the possessive pronouns/adjectives or the genitive case are not always semantically equivalent, see examples (13a) and (14a). The variant with the possessive adjective (14a) can be used only in the context when Joseph already has a tooth, see example (14b). In contrast, the sentence with the possessive dative (13a) can be used in the context — which is more probable — when Joseph does not have a tooth yet but a tooth is cutting, see example (13b). In addition, the variant with the possessive dative (13a) is suitable in the first context as well when Joseph already has a tooth and this tooth is growing, see example (13c). The difference in the distribution of the possessive pronouns/adjectives or the genitive case on the one hand and the possessive dative on the other can be thus boiled down to the semantic difference between the already existing possession and the future possession. The already existing possession can be expressed by the possessive pronouns/adjectives or the genitive case, see example (14a), and by the possessive dative as well, see example (13c), while the expression of the future possession is restricted to the possessive dative, see example (13b).

(13) a. *Pepíčkovi*$_{dat}$ *roste zub.*
'Joseph is teething.'
b. *Pepíček ještě nemá žádný zub, ale už mu*$_{dat}$ *zub roste.*
'Joseph does not have any tooth yet but a tooth is cutting now.'
c. *Pepíček už má jeden zub a ten zub mu*$_{dat}$ *roste.*
'Joseph already has one tooth and the tooth is growing.'

(14) a. *Pepíčkův*$_{pos}$ *zub roste.*
'Joseph's tooth is growing.'
b. **Pepíček ještě nemá žádný zub a jeho*$_{pos}$ *zub roste.*
'*Joseph does not have any tooth yet and his tooth is growing.'

of this case but it is rather strongly contextually bound, namely, it is implied by the lexical meaning of nouns.

Let me return back to the LVCs with the coreferring pair $ACT_n$-$BEN_v$. The similar semantic difference between the variant with the nominal ACTor in the form of the possessive pronouns/adjectives or the genitive case and the variant with the verbal BENefactor in the form of the possessive dative can be observed here as well. The nominal ACTor implies only the already existing possession of an entity denoted by predicative nouns. In contrast, the verbal BENefactor can entail not only the already existing possession but its future possession as well. From this it follows that in the contexts concerning the already existing possession, either the nominal ACTor or the verbal BENefactor can be used, compare examples (11a) and (11b) in Section 3.2. In contrast, the verbal BENefactor is restricted to the contexts in which the future possession is at play, compare the semantic difference between the examples (15a) and (15b) found in the data. (15a) with the possessive dative, the verbal BENefactor, can be interpreted in two ways: Russian companies and banks have already been entering the capital markets or they have not entered them yet, while (15b) with the nominal ACTor can rather have only the former interpretation, that Russian companies and banks have already been trading on the capital markets.

(15) a. *Na nových opatřeních, která by například ruským firmám*$_{BENv}$ *či bankám*$_{BENv}$ *uzavřela přístup k evropským kapitálovým trhům …*
'On new measures which would close access for Russian companies$_{BENv}$ or banks$_{BENv}$ to European capital markets'
b. *Na nových opatřeních, která by například uzavřela přístup ruských firem*$_{ACTn}$ *či bank*$_{ACTn}$ *k evropským kapitálovým trhům …* (SYNv7)
'On new measures which would close Russian companies'$_{ACTn}$ or banks'$_{ACTn}$ access to European capital markets'

Similar differences in the variants with the other coreferring pairs involving the nominal ACTor can be found as well. The expression of the nominal ACTor on the surface is associated with the already existing possession of an entity denoted by predicative nouns (in (16b), for example, it is the sympathy that people have that is aroused by swindlers) while the expression of LOCative can additionally entail the future possession of this entity (in (16a), it can be the sympathy that is evoked in people by swindlers either as an already experienced feeling or as a new feeling).

(16) a. *Podvodníci budí u lidí*$_{LOCv}$ *soucit.*
'Swindlers arouse sympathy in people$_{LOCv}$.'
b. *Podvodníci budí soucit lidí*$_{ACTn}$. (SYNv7)
'Swindlers arouse people's$_{ACTn}$ sympathy.'

The semantic difference between the already existing possession (expressed by either the nominal ACTor or the corresponding verbal complementation) and the future possession (expressed exclusively by the respective verbal complementation) would account for the complete lack of the nominal ACTor expressed on the surface with the LVCs *vytvořit*$^{pf}$*, vytvářet*$^{impf}$ *příležitost* 'to create an opportunity' (see Table 2,

Section 3.2) in which only the future possession is relevant, compare examples (17a) and (17b).[22]

(17) a. *Město občanům*$_{\text{BENv}}$ *vytváří pracovní příležitosti.*
'The city creates job opportunities for citizens$_{\text{BENv}}$.'
b. *?Město vytváří pracovní příležitosti občanů*$_{\text{ACTn}}$.
'The city creates citizens'$_{\text{ACTn}}$ job opportunities.'

The semantic account of the surface variants with the coreferring pair PAT$_{\text{n}}$-LOC$_{\text{v}}$ is rather different. The use of the nominal PAT semantically restricts the entity denoted by predicative nouns to their particular kinds, e.g., pleasure from food in (18b). In contrast, the verbal LOCative can be used even in the contexts when there is no such kind of the entity available, compare (18a) and (19a); in (19b) the use of the nominal PATient is semantically blocked as relief from sweeping as a particular kind of relief does not exist.

(18) a. *Chcete i při přísné dietě nacházet potěšení v jídle*$_{\text{LOCv}}$*?*
'Do you want to find pleasure in food$_{\text{LOCv}}$ even on a strict diet?'
b. *Chcete i při přísné dietě nacházet potěšení z jídla*$_{\text{PATn}}$*?* (SYNv7)
'Do you want to find pleasure from food$_{\text{PATn}}$ even on a strict diet?'

(19) a. *Nacházím útěchu v zametání*$_{\text{LOCv}}$. (SYNv7)
'I find relief in sweeping$_{\text{LOCv}}$.'
b. *?Nacházím útěchu ze zametání*$_{\text{PATn}}$.
'?I find relief from sweeping$_{\text{PATn}}$.'

## 4 CONCLUSION

I have shown here that even in the cases when a light verb does not have a sufficient number of valency positions in its valency frame for semantic participants of the predicative noun combined with the verb, the nominal participants in LVCs have a strong tendency to be expressed on the surface as the dependent on the verb, making use of optional complementations of the light verb as well. This tendency is attested in the corpus data by those semantic participants of predicative nouns that

22 ACTor is completely missing with the LVC *získat*$^{pf}$, *získávat*$^{impf}$ *půjčku* 'to get a loan' as well. However, in this case, a more plausible explanation for its lack is that the form of possessive pronouns/adjectives or the genitive case with the noun *půjčka* 'loan' ambiguously encodes either the ACTor or the ADDResse of the noun (e.g., in the nominal structure *Petrova*$_{\text{pos}}$ *půjčka* 'Peter's loan', *Petr* 'Peter' can be either the one who gives the loan or the one who receives it). It can be hypothesized, however, that in the similar cases where ambiguity is at play, the possibility to express the nominal ACTor on the surface may not be completely excluded but may depend on the meaning of nouns and the contexts in which they are used.

primarily correspond to their nominal ACTor as the most prominent valency complementation, and partly to their PATient. Although the speaker's choice between the nominal complementation and the verbal one for the surface realization of these nominal participants is semantically justified, the verbal complementations are overrepresented on the surface, probably covering broader semantic contexts than the corresponding nominal one.

The fact that the analyzed semantic participants of predicative nouns are primarily mapped onto ACTor (sporadically onto PATient) draws our attention to the question whether there is some hierarchy between semantic participants that determines which of them is expressed on the surface as verbal dependents. A crucial task in further research of the syntactic structure formation of LVCs thus lies in identifying which semantic participants of predicative nouns tend to be expressed on the surface as verbal dependents.

## REFERENCES


Alba-Salas, J. (2002) *Light Verb Constructions in Romance: A Syntactic Analysis.* Ph.D. thesis. Cornell University.

Allerton, D. J. (2002) *Stretched Verb Constructions in English*. London/New York: Routledge.

Alonso Ramos, M. (2007) Towards the Synthesis of Support Verbs Constructions. In: Wanner, L. (ed) *Selected Lexical and Grammatical Issues in the Meaning Text Theory*, 97–137. Amsterdam/Philadelphia: John Benjamins.

Apresjan, J. (2009) The Theory of Lexical Functions: An Update. In: Beck, D., K. Gerdes, J. Milićević and A. Polguère (eds) *Proceedings of the fourth international conference on Meaning-Text Theory*, 1–14. Montreal: OLST.

Baron, I. and M. Herslund (1998) Support Verb Constructions as Predicate Formation. In: Olbertz, H., K. Hengeveld and J. Sánchez García (eds) *The Structure of the Lexicon in Functional Grammar*, 99–116. Amsterdam/Philadelphia: John Benjamins.

Brinton, L. J. and M. Akimoto (1999) *Collocational and idiomatic aspects of composite predicates in the history of English*. Amsterdam/Philadelphia: John Benjamins.

Butt, M. (1997) Complex Predicates in Urdu. In: Alsina, A., J. Bresnan and P. Sells (eds) *Complex Predicates*, 107–149. Stanford, Calif.: CSLI Publications.

Butt, M. (2010) The Light Verb Jungle: Still Hacking Away. In: Amberber M., B. Baker and M. Harvey (eds) *Complex Predicates: Cross-linguistic Perspectives on Event Structure*, 48–78. New York: Cambridge University Press.

Butt, M. and W. Geuder (2013) On the (Semi) lexical Status of Light Verbs. In: Cover N. and H. van Riemsdijk (eds) *Semi-lexical Categories: The Function of Content Words and the Content of Function Words*, 323–370. Berlin/New York: Walter de Gruyter.

Cantarini, S. (2004) *Costrutti con verbo supporto. Italiano e tedesco a confronto*. Bologna: Patron.

Cattell, R. (1984) *Composite Predicates in English*. Sydney/New York/London: Academic Press.

Choi, I. and S. Wechsler (2002) Mixed Categories and Argument Transfer in the Korean Light Verb Construction. In: Eynde, F. van, L. Hellan and D. Beerman (eds) *Proceedings of the 8th International HPSG Conference*, 103–120. Stanford, Calif.: CSLI Publications

Cinková, S. (2009) *Words that Matter: Towards a Swedish-Czech Colligational Dictionary of Basic Verbs*. Praha: ÚFAL.

Cruse, D. A. (1986) *Lexical Semantics*. Cambridge: Cambridge University Press.

Dixon, R. M. W. and A. Y. Aikhenvald (2006) *Complementation. A Cross-Linguistic Typology*. New York: Oxford University Press.

Grimshaw, J. and A. Mester (1988) Light Verbs and θ-Marking. *Linguistic Inquiry* 19/2, 205–232.

Gross, G. (1996) Prédicats nominaux et compatibilité aspectuelle. *Langages* 30/121, 54–72.

Gross, M. (1981) Les bases empiriques de la notion de prédicat sémantique. *Langages* 15/63, 7–52.

Hajič, J., E. Bejček, A. Bémová, E. Buráňová, E. Hajičová, J. Havelka, P. Homola, J. Kárník, V. Kettnerová, N. Klyueva, V. Kolářová, L. Kučová, M. Lopatková, M. Mikulová, J. Mírovský, A. Nedoluzhko, P. Pajas, J. Panevová, L. Poláková, M. Rysová, P. Sgall, J. Spoustová, P. Straňák, P. Synková, M. Ševčíková, J. Štěpánek, Z. Urešová, B. Vidová Hladká, D. Zeman, Š. Zikánová and Z. Žabokrtský (2018) *Prague Dependency Treebank 3.5*. Available at http://hdl.handle.net/11234/1-2621 [last accessed 22 August 2020]

Hajič J., E. Hajičová, J. Panevová, P. Sgall, O. Bojar, S. Cinková, E. Fučíková, M. Mikulová, P. Pajas, J. Popelka, J. Semecký, J. Šindlerová, J. Štěpánek, J. Toman, Z. Urešová and Z. Žabokrtský (2012) Announcing Prague Czech-English Dependency Treebank 2.0. In: Calzolari, N., K. Choukri, T. Declerck, M. U. Doğan, B. Maegaard, J. Mariani, A. Moreno, J. Odijk and S. Piperidis (eds) *Proceedings of the 8th International Conference on Language Resources and Evaluation (LREC 2012)*, 3153–3160. İstanbul: European Language Resources Association.

Ježek, E. (2011) Verbes supports et composition sémantique. *Cahiers de Lexicologie* 98/1, 29–43.

Karimi-Doostan, G. (2005) Light verbs and structural case. *Lingua* 115/12, 1737–1756.

Kettnerová, V. (2017) Syntaktická struktura komplexních predikátů v češtině. *Slovo a slovesnost* 78/1, 3–24.

Kettnerová, V. and E. Bejček (2016) Distribution of Valency Complements in Czech Complex Predicates: Between Verb and Noun. In: Calzolari, N., K. Choukri, T. Declerck, S. Goggi, M. Grobelnik, B. Maegaard, J. Mariani, H. Mazo, A. Moreno, J. Odijk and S. Piperidis (eds) *Proceedings of the 10th International Conference on Language Resources and Evaluation (LREC 2016)*, 515–521. Paris: European Language Resources Association (ELRA).

Kettnerová, V. and M. Lopatková (2019) Reflexives in Czech from a Dependency Perspective. In: Gerdes, K. and S. Kahane (eds) *Proceedings of the Fifth International Conference on Dependency Linguistics (Depling, Syntaxfest 2019)*, 14–25. Paris: Association for Computational Linguistics.

Kettnerová, V., M. Lopatková, E. Bejček and P. Barančíková (2018) Enriching VALLEX with Light Verbs: From Theory to Data and Back Again. *The Prague Bulletin of Mathematical Linguistics* 111, 29–56.

Kilgarriff, A., V. Baisa, J. Bušta, M. Jakubíček, V. Kovář, J. Michelfeit, P. Rychlý and V. Suchomel (2014) The Sketch Engine: ten years on. *Lexicography. Journal of ASIALEX* 1/1, 7–36.

Kolářová, V. (2010) *Valence deverbativních substantiv v češtině (na materiálu substantiv s dativní valencí)*. Praha: Karolinum.

Kolářová, V. (2014) Special valency behavior of Czech deverbal nouns. In: Spevak, O. (ed) *Noun Valency*, 19–59. Amsterdam/Philadelphia: John Benjamins.

Kolářová, V., A. Vernerová and J. Verner (2019) Non-systemic valency behavior of Czech deverbal nouns based on the NomVallex lexicon. *Jazykovedný časopis* 70/2, 424–433.

Křen, M., V. Cvrček, T. Čapka, A. Čermáková, M. Hnátková, L. Chlumská, T. Jelínek, D. Kováříková, V. Petkevič, P. Procházka, H. Skoumalová, M. Škrabal, P. Truneček, P. Vondřička and A. Zasina (2017) *Korpus SYN, verze 7 z 29. 11. 2018*. Praha: Ústav Českého národního korpusu FF UK. Available at http://www.korpus.cz [last accessed 22 August 2020]

Lopatková, M., V. Kettnerová, E. Bejček, A. Vernerová and Z. Žabokrtský (2016) *Valenční slovník českých sloves VALLEX*. Praha: Karolinum.

Macháčková, E. (1979) *Analytické konstrukce typu sloveso + abstraktní substantivum (Analytické*

*vyjadřování predikátů)*. Praha: Ústav pro jazyk český ČSAV.

Macháčková, E. (1992) Je posesívní dativ volný, nebo vázaný? *Slovo a slovesnost* 53/3, 185–192.

Macháčková, E. (1994) Constructions with verbs and abstract nouns in Czech (analytical predicates). In: Čmejrková, S. and F. Štícha (eds) *The syntax of sentence and text*, 365–374. Amsterdam/Philadelphia: John Benjamins.

Mel'čuk, I. A. (1982) Lexical Functions in Lexicographic Description. In: McCaulay, M. et al. (eds) *Proceedings of the Eighth Annual Meeting of the Berkeley Linguistics Society*, 427–444.

Mel'čuk, I. A. (1996) Lexical Functions: A Tool for the Description of Lexical Relations in a Lexicon. In: Wanner, L. (ed) *Lexical Functions in Lexicography and Natural Language Processing*, 37–102. Amsterdam/Philadelphia: John Benjamins.

Miyamoto, T. (2000) *The Light Verb Construction in Japanese. The Role of the Verbal Noun*. Amsterdam/Philadelphia: John Benjamins.

Mohanan, T. (1994) *Argument Structure in Hindi*. Stanford, Calif.: CSLI Publications.

Noonan, M. (2007) Complementation. In: Shopen, T. (ed) *Language Typology and Syntactic Description*, 52–150. Cambridge: Cambridge University Press.

Panevová, J. (1974–75) On Verbal Frames in Functional Generative Description I-II. *The Prague Bulletin of Mathematical Linguistics* 22 and 23, 3–40, 17–52.

Panevová, J. (1994) Valency Frames and the Meaning of the Sentence. In: Luelsdorff, P. A. (ed) *The Prague School of Structural and Functional Linguistics: A Short Introduction*, 223–243. Amsterdam/Philadelphia: John Benjamins.

Panevová, J., E. Hajičová, V. Kettnerová, M. Lopatková, M. Mikulová and M. Ševčíková (2014) *Mluvnice současné češtiny 2. Syntax češtiny na základě anotovaného korpusu*. Praha: Karolinum.

Piťha, P. (1971) Existuje dativ posesívní? *Slovo a slovesnost* 32/4, 301–312.

Piťha, P. (1984) Case frames of nouns. In: Sgall, P. (ed) *Contributions to functional syntax, semantics, and language comprehension*, 225–238. Amsterdam/Philadelphia: John Benjamins.

Piťha, P. (1992) *Posesivní vztah v češtině*. Praha: AVED.

Polenz, P. von (1963) *Funktionsverben im heutigen Deutsch: Sprache in der rationalisierten Welt*. Düsseldorf: Pädagogischer Verlag Schwann.

Radimský, J. (2010) *Verbo-nominální predikát s kategoriálním slovesem*. České Budějovice: Jihočeská univerzita.

Razímová, M. (2004) *Funkce adverbálního dativu v hloubkové a povrchové stavbě české věty*. Diploma thesis, FF UK.

Sanromán Vilas, B. (2011) The Unbearable Lightness of Light Verbs: Are They Semantically Empty Verbs? In: Boguslavsky, I. and L. Wanner (eds) *Proceedings of the 5th International Conference on Meaning-Text Theory*, 253–263. Barcelona.

Sgall, P., E. Hajičová and J. Panevová (1986) *The Meaning of the Sentence in its Semantic and Pragmatic Aspects*. Dordrecht: Reidel.

Thompson, S. A. and P. J. Hopper (2001) Transitivity, clause structure, and argument structure: Evidence from conversation. In: Bybee, J. and P. Hopper (eds) *Frequency and the emergence of linguistic structure*, 27–60. Amsterdam/Philadelphia: John Benjamins.

Uhlířová, L. and I. Kučerová (2017) Projektivnost. In: Karlík, P., M. Nekula, and J. Pleskalová (eds) *CzechEncy — Nový encyklopedický slovník češtiny*. Available at https://www.czechency.org/slovnik/PROJEKTIVNOST [last accessed 30 October 2020]

Urešová, Z., J. Štěpánek, J. Hajič, J. Panevová and M. Mikulová (2014) *PDT-Vallex: Czech valency lexicon linked to treebanks*. Available at http://hdl.handle.net/11858/00-097C-0000-0023-4338-F [last accessed 22 August 2020]

Urešová, Z., E. Fučíková and J. Šindlerová (2016) CzEngVallex: a bilingual Czech-English valency lexicon. *The Prague Bulletin of Mathematical Linguistics* 105, 17–50.

Urešová, Z., E. Fučíková, E. Hajičová and J. Hajič (2019) Parallel Dependency Treebank

Annotated with Interlinked Verbal Synonym Classes and Roles. In: Candito, M., K. Evang, S. Oepen and D. Seddah (eds) *Proceedings of the 18th International Workshop on Treebanks and Linguistic Theories (TLT, SyntaxFest 2019)*, 38–50. Paris: Association for Computational Linguistics.

Vetulani, G. (2000) *Rzeczowniki predykatywne języka polskiego. W kierunku syntaktycznego słownika rzeczowników predykatywnych*. Poznań: Wydawnictwo naukowe UAM.

Wierzbicka, A. (1982) Why Can You Have a Drink When You Can't *Have an Eat? *Language* 58/4, 753–799.



**Václava Kettnerová**
Matematicko-fyzikální fakulta Univerzity Karlovy
Ústav formální a aplikované lingvistiky
Malostranské nám. 2/25, 118 00 Praha 1
ORCID-ID: 0000-0001-9694-1304
kettnerova@ufal.mff.cuni.cz